

What is claimed is:

Claim 1. A transdermal delivery system (TDS) for treatment of a living body by rapidly delivering at least one active agent across the skin, said TDS including an effective amount of at least one active agent solute in a solvent, said solute having molecular properties including van der Waals forces and dipole moments, said solvent having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent being substantially the same as said molecular properties of said solute and said solvent.

Claim 2. A TDS of claim 1 wherein said solvent comprises at least one solvent modifier forming a solvent system, said solvent modifier changing the polarity of said solvent system to substantially equal the polarity of said solute, said solvent modifier having molecular properties including van der Waals forces and dipole moments, said solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 3. A TDS of claim 1 wherein said solvent includes at least one solute modifier forming a solvent system, said solute modifier forming a reversible complex with said solute for facilitating passage of the solute complex across the skin, said solute modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 4. A TDS of claim 2 wherein said solvent system includes at least one solute modifier, said solute modifier forming a reversible complex with said solute for facilitating passage of the solute complex across the skin, said solute modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 5. A TDS of claim 1 wherein said solvent includes at least one compound for stimulating the release of cellular energy in the skin forming a solvent system, said compound

having molecular properties including van der Waals forces and dipole moments, said solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 6. A TDS of claim 5 wherein said compound for stimulating the release of cellular energy generates cAMP at the cellular level.

Claim 7. A TDS of claim 5 wherein said compound for stimulating the release of cellular energy generates cGMP at the cellular level.

Claim 8. A TDS of claim 2 wherein said solvent system includes at least one compound for stimulating the release of cellular energy in the skin, said compound having molecular properties including van der Waals forces and dipole moments, said solvent system having molecular properties, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 9. A TDS of claim 3 wherein said solvent system includes at least one compound for stimulating the release of cellular energy in the skin, said compound having molecular properties including van der Waals forces and dipole moments, said solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 10. A TDS of claim 4 wherein said solvent system includes at least one compound for stimulating the release of cellular energy in the skin, said compound having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 11. A TDS of claim 1 wherein said solvent includes at least one skin stabilizer composition to facilitate safe and effective dosage of said active agent and protect from local and systemic sensitization forming a solvent system, said composition having molecular properties including van der

Waals forces and dipole moments, said solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 12. A TDS of claim 2 wherein said solvent system includes at least one skin stabilizer composition to facilitate safe and effective dosage of said active agent and protect from local and systemic sensitization, said composition having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 13. A TDS of claim 3 wherein said solvent system includes at least one skin stabilizer composition to facilitate safe and effective dosage of said active agent and protect from local and systemic sensitization, said composition having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 14. A TDS of claim 4 wherein said solvent system includes at least one skin stabilizer composition to facilitate safe and effective dosage of said active agent and protect from local and systemic sensitization, said composition having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 15. A TDS of claim 5 wherein said solvent system includes at least one skin stabilizer composition to facilitate safe and effective dosage of said active agent and protect from local and systemic sensitization, said composition having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 16. A TDS of claim 1 wherein said solvent includes at least one membrane permeability modifier to enhance penetration of the skin forming a solvent system, said membrane permeability modifier having molecular properties

including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 17. A TDS of claim 2 wherein said solvent system includes at least one permeability modifier to enhance penetration of the skin, said permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 18. A TDS of claim 4 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 19. A TDS of claim 10 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 20. A TDS of claim 14 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 21. A TDS of claim 15 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.



Claim 22. A TDS of claim 3 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 23. A TDS of claim 9 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 24. A TDS of claim 13 wherein said solvent system includes at least one permeability modifier having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 25. A TDS of claim 1 wherein said solvent includes a capillary dilator forming a solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 26. A TDS of claim 18 wherein said solvent system includes a capillary dilator having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 27. A TDS of claim 19 wherein said solvent system includes a capillary dilator having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 28. A TDS of claim 21 wherein said solvent system includes a capillary dilator having molecular properties including van de Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 29. A TDS of claim 23 wherein said solvent system includes a capillary dilator having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 30. A TDS of claim 24 wherein said solvent system includes a capillary dilator having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system being substantially the same as said molecular properties of said solvent system and said solute.

Claim 31. A transdermal delivery system (TDS) for treatment of a living body by rapidly delivering an effective dose of at least 0.25 mg/cm<sup>2</sup>/day of at least one active agent across the skin by application of said TDS to an area of the skin, said TDS comprising said at least one active agent and a solvent system, said at least one active agent having a molecular weight in excess of 300 Daltons, said at least one active agent having molecular properties including van der Waals forces and dipole moments, said at least one active agent dissolved in said solvent system as a solute, said solvent system having molecular properties including van der Waals forces and dipole moments, said molecular properties of said solvent system substantially the same as said molecular properties of said solvent system and said solute.

Claim 32. A TDS of claim 31 wherein said molecular weight of said active agent is from about 340 Daltons to about 22,000 Daltons.

Claim 33. A TDS of claim 31 wherein said effective dose is from about 0.25 mg/cm<sup>2</sup>/day to about 1 mg/cm<sup>2</sup>/day.

Claim 34. A TDS of claim 33 wherein said molecular weight of said active agent is from about 340 Daltons to about 22,000 Daltons.

Claim 35. A TDS of claim 31 wherein said TDS is formed as a unit dose, said unit dose being approximately 1 cc, said unit dose comprising from about 0.25 mg to about 1 mg of said medicament.

Claim 36. A TDS of claim 35 wherein said unit dose is a patch.

Claim 37. A TDS of claim 35 wherein said unit dose is a liquid.

Claim 38. A TDS of claim 31 wherein said molecular properties of said solute and solvent system are within approximately  $\pm 20\%$  of said molecular properties of said solvent system.

Claim 39. A method of making a transdermal delivery system (TDS) comprising

- (a) selecting one or more active agent;
- (b) determining an effective dose of said active agent, said effective dose of said active agent having molecular properties including van der Waals forces and dipole moments;
- (c) quantifying said molecular properties of said active agent;
- (d) determining an amount of a solvent to solubilize said effective dose of said active agent, said amount of said solvent having molecular properties including van der Waals forces and dipole moments;
- (e) quantifying said molecular properties of said amount of said solvent;
- (f) comparing said molecular properties of said active agent and said molecular properties of said solvent;
- (g) determining that said molecular properties of said solvent are substantially the same as said molecular properties of said active agent and said solvent;
- (h) combining said solvent and said active agent forming a true solution of said solvent and a solute.

Claim 40. A method of making a TDS of claim 39 further comprising

- (a) selecting additional ingredients for said solvent forming a solvent system, said additional ingredients including at least one of solute modifiers, solvent modifiers, compositions for release of cellular energy, skin stabilizers, membrane permeability modifiers, capillary dilators and combinations thereof, each of said additional ingredients having molecular properties including van der Waals forces and dipole moments;
- (b) determining that said molecular properties of said solvent system are substantially the same as said molecular properties of said solvent system and said solute;
- (c) combining said solvent system and said solute.

Claim 41. A method of selecting the ingredients and amounts of a TDS comprising the steps of

- (a) selecting one or more active agents necessary to treat a specific condition;
- (b) quantifying the amount of said active agent for an effective dose;
- (c) quantifying the molecular properties of said active agent to include van der Waals forces and the sum of mol-moments;

- (d) surveying solvents for said active agent;
- (e) quantifying the amounts of said solvents to solubilize said active agent;
- (f) quantifying the molecular properties of said solvents to include van der Waals forces and mol-moments;
- (g) comparing the molecular properties of said solvents to said molecular properties of said active agent;
- (h) determining additional ingredients to form a solvent system for transmigration;
- (i) quantifying the molecular properties of said additional ingredients to include van der Waals forces and mol-moments;
- (j) determining a weighted sum of said molecular properties of said additional ingredients and said molecular properties of said solvents to determine molecular properties of said solvent system;
- (k) summing said molecular properties of said solvent system and said active agent;
- (l) comparing (j) and (k); and
- (m) selecting said solvent system wherein said molecular properties of said active agent and said solvent system are approximately  $\pm 20\%$  of said molecular properties of said solvent system.